WHAT IS CLAIMED IS:

1. A method of optimizing and controlling a material processing system, the method comprising the acts of:

creating a series of sequences with a graphical user interface by selecting and placing a plurality of tasks in a specified relationship, wherein the plurality of tasks define functions to be performed for optimizing and controlling the material processing system;

defining a start time, a duration, and a frequency of operation of at least one of said sequences;

activating said at least one sequence at the defined start time;

performing a specified function as defined by at least one of the plurality of tasks following the duration of each sequence; and

calculating a next run-time of at least one of said sequences.

2. The method of Claim 1, wherein at least one of the series of sequences represents a mathematical model of the material processing system.

3. The method of Claim 2, wherein the mathematical model is used to optimize the material processing system.

4. The method of Claim 3, further comprising the step of controlling the material processing system using the optimized mathematical model.

5. The method of Claim 1, wherein the series of sequences transmits control signals to a process control network.

6. The method of Claim 5, wherein the process control network controls the material processing system.

7. The method of Claim 1, wherein at least one of said plurality of tasks comprises an input branch and at least one output branch.

8. The method of Claim 1, wherein at least one of said plurality of tasks has a plurality of output branches.

9. The method of Claim 8, further comprising the step of selecting one of said plurality of output branches.

10. The method of Claim 9, wherein the one of said plurality of output branches is selected at least partly based upon results of a conditional operation.

11. A real time graphical task scheduler used to both optimize and control a material processing system comprising:

a graphical user interface;

a plurality of task icons capable of being displayed on the graphical user interface, wherein each icon represents a task to be performed;

a sequence development endow capable of being displayed on the graphical user interface, wherein at least two of the plurality of task icons are connected to define a sequence;

a sequence scheduler which controls the operation of the sequence;

an optimization modeler which calculates a plurality of input variables for the sequence to optimize the material processing system operation; and

a process controller receiving signals from the sequence and relaying said signals to the material processing system.

12. The real time graphical task scheduler of Claim 11, wherein at least one of said task icons is color-coded to define the state of said task.

13. The real time graphical task scheduler of Claim 11, wherein the sequence has a start time, a run-time, and an interval time.

14. The real time graphical task scheduler of Claim 11, wherein the sequence scheduler activates the sequence at a start time.

15. The real time graphical task scheduler of Claim 11, wherein the sequence scheduler deactivates the sequence after expiration of a run-time.

16. The real time graphical task scheduler of Claim 11, wherein the sequence scheduler generates a next run-time based on an interval time.

17. The real time graphical task scheduler of Claim 11, wherein the sequence is designated to either optimize or control the material processing systems.

18. The real time graphical task scheduler of Claim 17, wherein an optimized sequence may be converted to a control sequence.

19. The real time graphical task scheduler of Claim 11, wherein the optimization modeler estimates appropriate input variables from history data of system operation.

20. A method of creating a sequence of instructions for optimizing and controlling material processing systems, the method comprising the acts of:

selecting a first task from a list of task icons on a graphical user interface;

placing the first task in the sequence;

selecting a second task having a plurality of output branches from the list of task icons;

adding the second task to the sequence;

defining a relationship between the first task and the second task; and

selecting one of the plurality of output branches of the second task based upon a defined set of criteria.

21. The method of Claim 20, wherein successive tasks are selected from the list of task icons and added to the sequence.

22. The method of Claim 20, wherein the one of the plurality of output branches is selected based upon the results of a selected task.

23. The method of Claim 20, wherein the one of the plurality of output branches is selected based upon data external to the sequence of instructions.

24. The method of Claim 20, wherein the sequence of instructions is used to control the operation of the material processing system.

25. The method of Claim 20, wherein the sequence of instructions is used to simulate the operation of the material processing system.

26. The method of Claim 25, wherein the operation of the material processing system is optimized by the simulation.

27. The method of Claim 20, wherein one of the plurality of output branches of the second task loops back to the input of the first task.

28. A real time graphical task scheduler for optimizing and controlling material processing systems comprising:

means for graphically creating a plurality of sequences by combining a plurality of tasks in a specified relationship; and

means for controlling the scheduling and operation of the plurality of sequences.

29. The real time graphical task scheduler of Claim 28, wherein each of said task icons in a sequence is color-coded to define the state of said task.

30. The real time graphical task scheduler of Claim 28, wherein the sequence has a start time, a run-time, and an interval time.

31. The real time graphical task scheduler of Claim 30, wherein the means for controlling activates the sequence at the start time.

32. The real time graphical task scheduler of Claim 31, wherein the means for controlling deactivates the sequence after expiration of the run-time.

33. The real time graphical task scheduler of Claim 32, wherein the means for controlling generates a next non-time based on the interval time.

34. The real time graphical task scheduler of Claim 28, wherein the sequence is designated to either optimize or control the material processing system.

35. A method of both optimizing and controlling a material processing system comprising:

defining a plurality of task sequences using a graphical user interface;

scheduling the operation parameters of the plurality of task sequences;

simulating operation of the material processing system to calculate at least one variable for operating the material processing system; and

transferring the at least one variable to a process controller to control the operation of the material processing system.

36. The method of Claim 35, wherein the plurality of task sequences create a mathematical model of the material processing system.

37. The method of Claim 36, wherein the mathematical model of the material processing system is optimized during the operation simulation.

38. The method of Claim 37, wherein the at least one input variable is calculated from the optimized mathematical model.

39. The method of Claim 37, wherein the at least one input variable is an input variable.

40. A real time graphical task scheduler including branching logic stored on a computer readable media for simulating and controlling material processing systems comprising:

a graphical user interface having a plurality of task icons representing a plurality of tasks;

means for placing a first task in a sequence;

means for connecting a second task having a plurality of output branches to the first task;

means for selecting one of the plurality of output branches of the second task.

41. The real time graphical task scheduler of Claim 40, wherein the placing means uses a pointing device.

42. The real time graphical task scheduler of Claim 40, wherein the sequence may be scheduled to begin at a predefined time.

43. The real time graphical task scheduler of Claim 40, wherein the selecting means is based upon a conditional statement defined in one of the plurality of tasks.